



*Mercury, it ain't Going  
Away!*

EPA Region 6 Annual  
Pretreatment Workshop

April 15<sup>th</sup>  
Irving, Texas

Allen Gilliam  
ADEQ State Pretreatment Coordinator

**WANNA PLAY BALL??**

**NOT!!!**



In lakes & rivers, it's transformed by bacteria into methyl Hg, a potent neurotoxin that works its way up the food chain, accumulating in greater concentrations with each step. Most at risk are young children & fetuses of pregnant women who have eaten Hg-contaminated fish. Methyl Hg interferes with development of the nervous system.



WILL IT BE THE  
MAD COW BEEF,  
THE HORMONE CHICKEN,  
OR THE MERCURY FISH?

UM... I THINK  
I'LL GO WITH THE  
VEGETARIAN DISH.

PESTICIDE  
OR HEPATITIS?



MAYBE  
JUST  
WATER

POINT SOURCE, OR  
AGRICULTURAL  
RUNOFF?

TALS

UNIVERSAL PEST STAMP  
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# From the Green Bay Press Gazette -

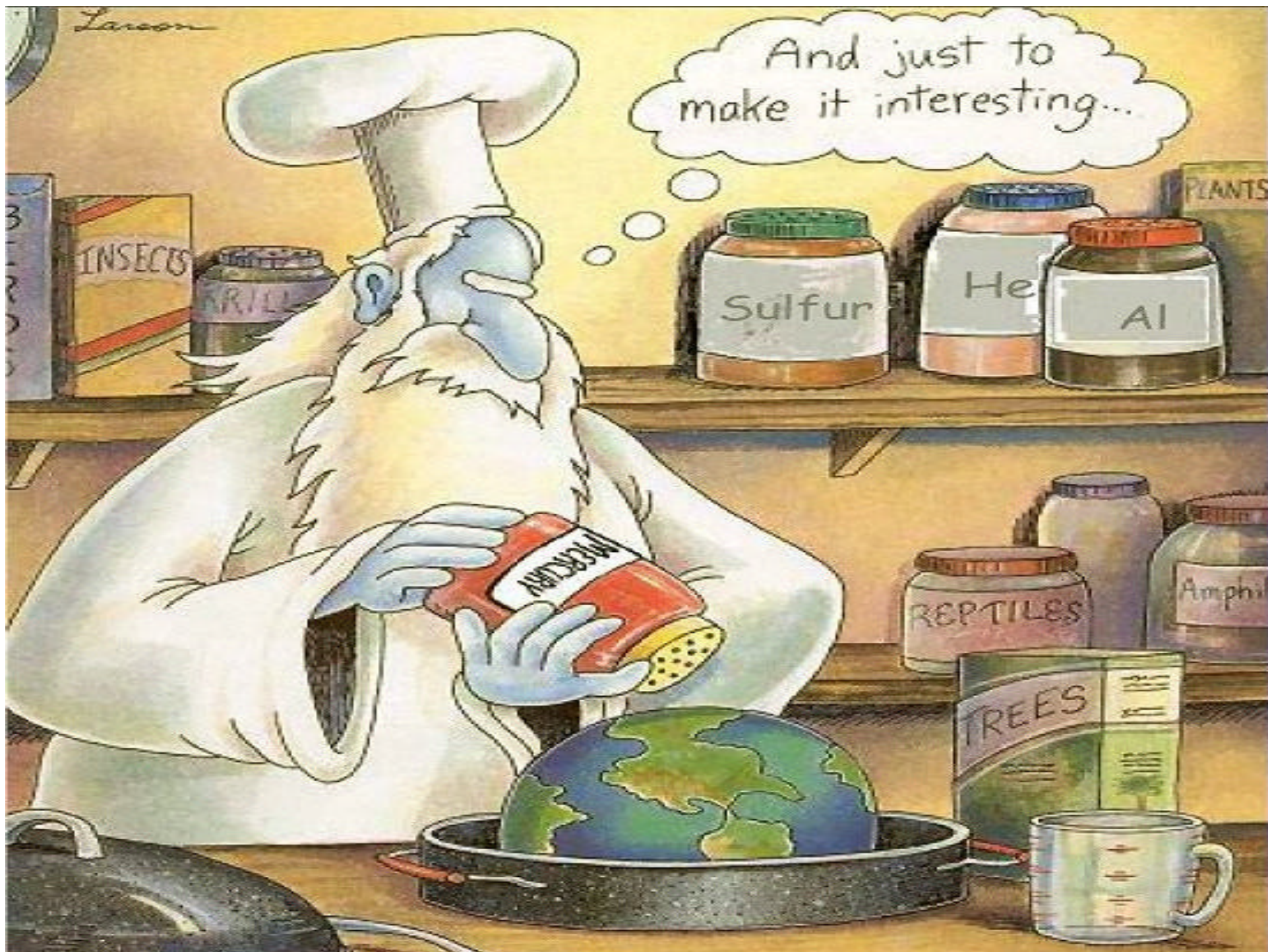


When the epitaph is finally written for the commercial use of mercury, Wess Damro's words might serve:

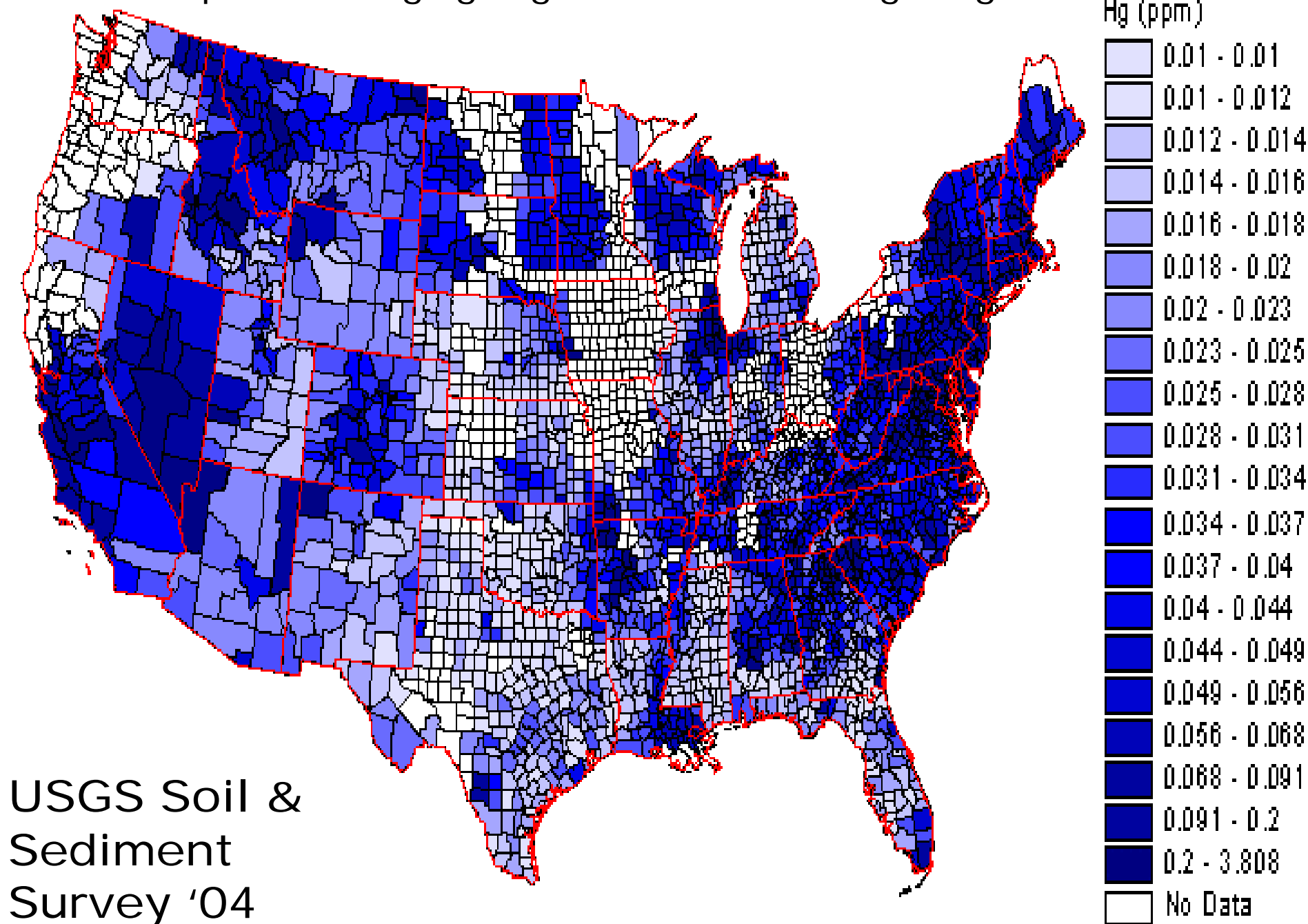
"It's a very useful material," Damro said. "It's just that it's not as safe as it should be."

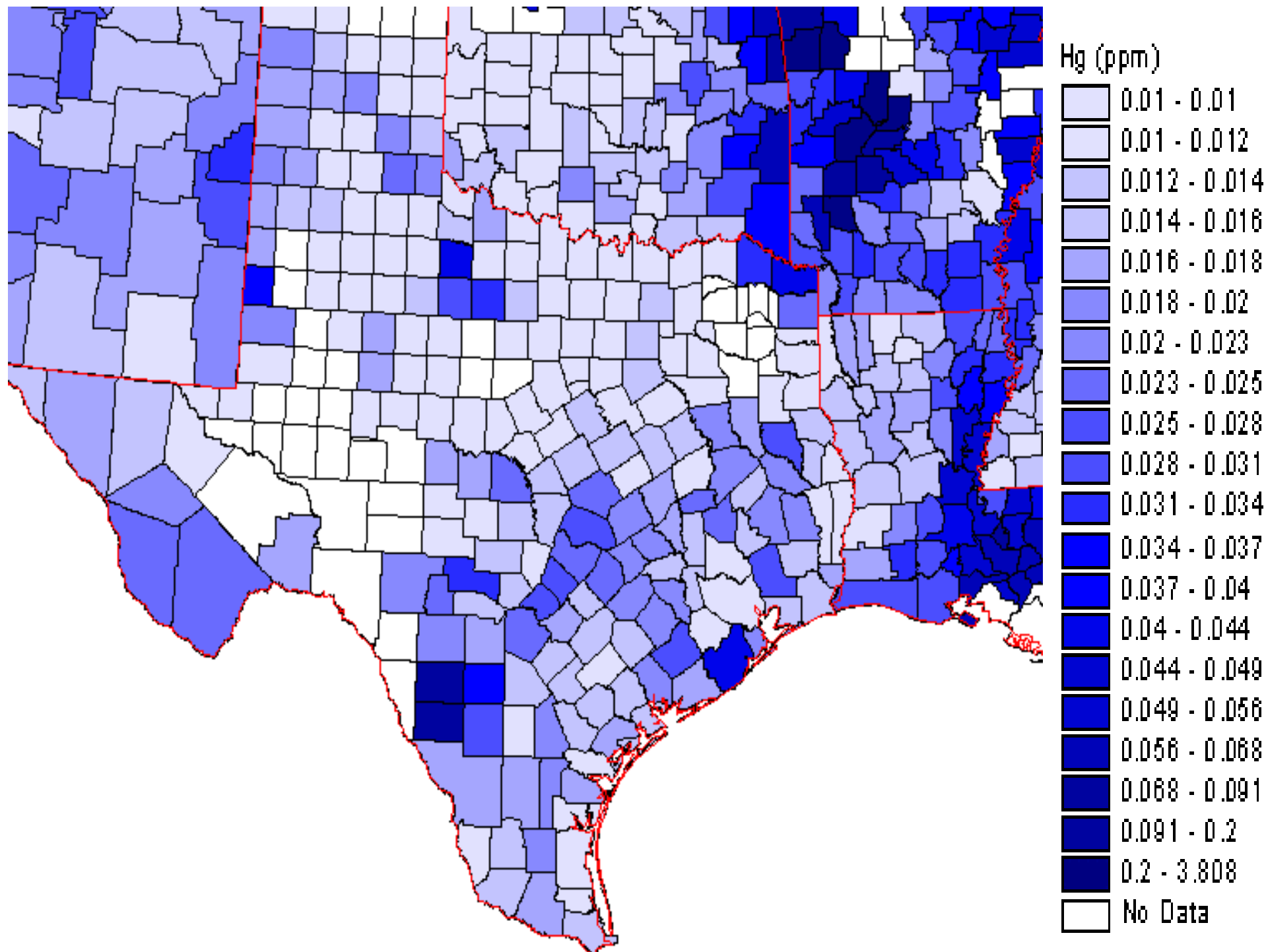
Mercury combines two useful properties: It's an electricity-conducting metal that's also a liquid at room temperatures.





<http://tin.er.usgs.gov/geochem/doc/averages/hg/usa.html>







# Region by Region Studies/Surveys

Region I = 44

Region II = 27

Region III = 6

Region IV = 29

Region V = 33

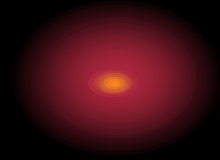
Region VI = 2

Region VII = 8

Region VIII = 12

Region IX = 28

Region X = 12



# SOURCES?



Numerous reports would suggest majority is from atmospheric deposition


Coal fired power plants' emissions ~ 50 tons/yr

# ***"Mercury falling with rain/snow"***



10 samples collected from roof  
on an Environmental Center in  
Ohio City between Oct. & Dec.  
last year:

Results? Hg levels 8 times  
higher (10+ ppt), on average,  
than levels considered safe for  
the Great Lakes by the EPA



“UNCONTROLLABLE  
SOURCES”

DOMESTIC PRODUCTS

Some states w / laws on  
“Product Bans with Hg-  
added”:



Connecticut, Maine, New  
Hampshire, Rhode Island,  
Washington, California,  
Illinois, Indiana,  
Massachusetts, Michigan,  
Minnesota, Oregon & **TEXAS**



# WHAT DO YOU SEE ON OUR FUTURE PRETREATMENT RADAR SCREEN?



- Some Regions & States NOW requiring permittees to use the more sensitive method 1631 to “look” for *MERCURY* @ lower levels to verify compliance with, or excursions of WQ Criteria
- When will Region 6 begin similar requirements?

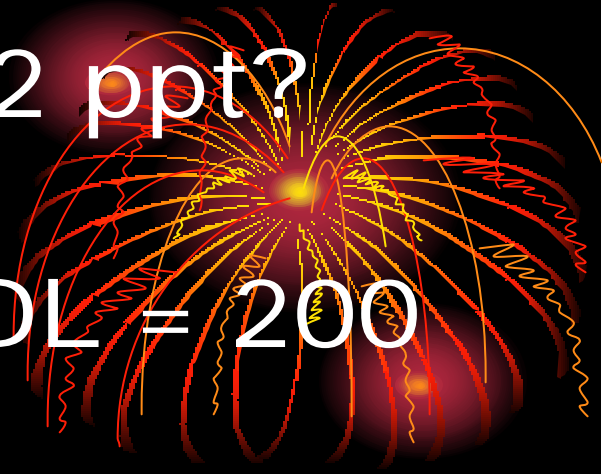
Region 6 WQ Criteria = 12 ppt?

Current method 245.1 MDL = 200 ppt

Most POTWs show Inf/Eff < 200 ppt  
= no problem?

More sensitive method 1631  
MDL = 0.2 - 0.5 ppt

Think ya got problems now?



# N.E. Ohio Regional Sewage District (3 POTWs)



Influent (ppt)

Ranged from  
5 to 1400  
Avg ~ 150

Effluent (ppt)

Ranged from  
1.2 to 9.5  
Avg ~ 3.0

Sludge (mg/kg-Dry weight)

Ranged from  
0.1 to 4.3  
Avg ~ 1.2

# '95 Arkansas Study w/1669 sampling & 1631 analyticals



<b>POTW</b>	<b>Effluent Results w / 8 samples taken @ each (ppt)</b>
<b>#1</b>	<b>Max = 14.7, Min = 0.7, Avg = 5.1</b>
<b>#2</b>	<b>Max = 25.1, Min = 4.3, Avg = 10</b>
<b>#3</b>	<b>Max = 53.2, Min = 14.4, Avg = 29.2</b>
<b>#4</b>	<b>Max = 28.9, Min = 9.2, Avg = 16.3</b>
<b>#5</b>	<b>Max = 32.2, Min = 6.1, Avg = 16</b>



“Controllable” Wastewater  
dischargers = the health  
care sector



**National Program:  
Hospitals for a Healthy Environment  
(H2E) doing their part: the AHA signs  
MOU w/EPA that says:**

**"The Parties intend to work together to develop a Mercury Waste Virtual Elimination Plan that will set forth a strategy for achieving the goal of virtually eliminating mercury-containing waste from the health care industry waste stream by the year 2005."**

<http://www.h2e-online.org/>

# Milwaukee Metro Sewer District



**“Dental offices are the largest source of Hg discharges to WW treatment plants, which are not designed to remove mercury from sewage” (but do...)**

**Have req'd by Ord. install. of amalgam separators & implementation of BMPs**  
*(Ordinance language available upon request)*

# DENTAL STUDIES

Sample	mg/l	Fail TCLP?
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Sludge from WW lines	0.2 – 0.4	YES
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WW from chair side traps	0.03 - 0.7	YES (2/5)
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Mix of chair side & used amalgam	0.01 - 1.0	YES (4/5)
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(AMSA says 56 while WEF says 250 mg/DDSD/day??)



# Prereatment Requirements being recognized?

**CFR 403.12(p)(1): "The IU shall notify the POTW, the EPA Regional Waste Management Division Director & State haz waste authorities in writing of any discharge into the POTW of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR part 261..."**

**Busting local limits?**

**Toronto Sewer Dist. Ord. req'd  
amalgam separators by 1/02**



**800 of 1,100 DDs clinics complied  
& within 6 month period, sludge data = 58%  
reduction (17,383 gm/mo down to 7,306)**

### **Implications?**

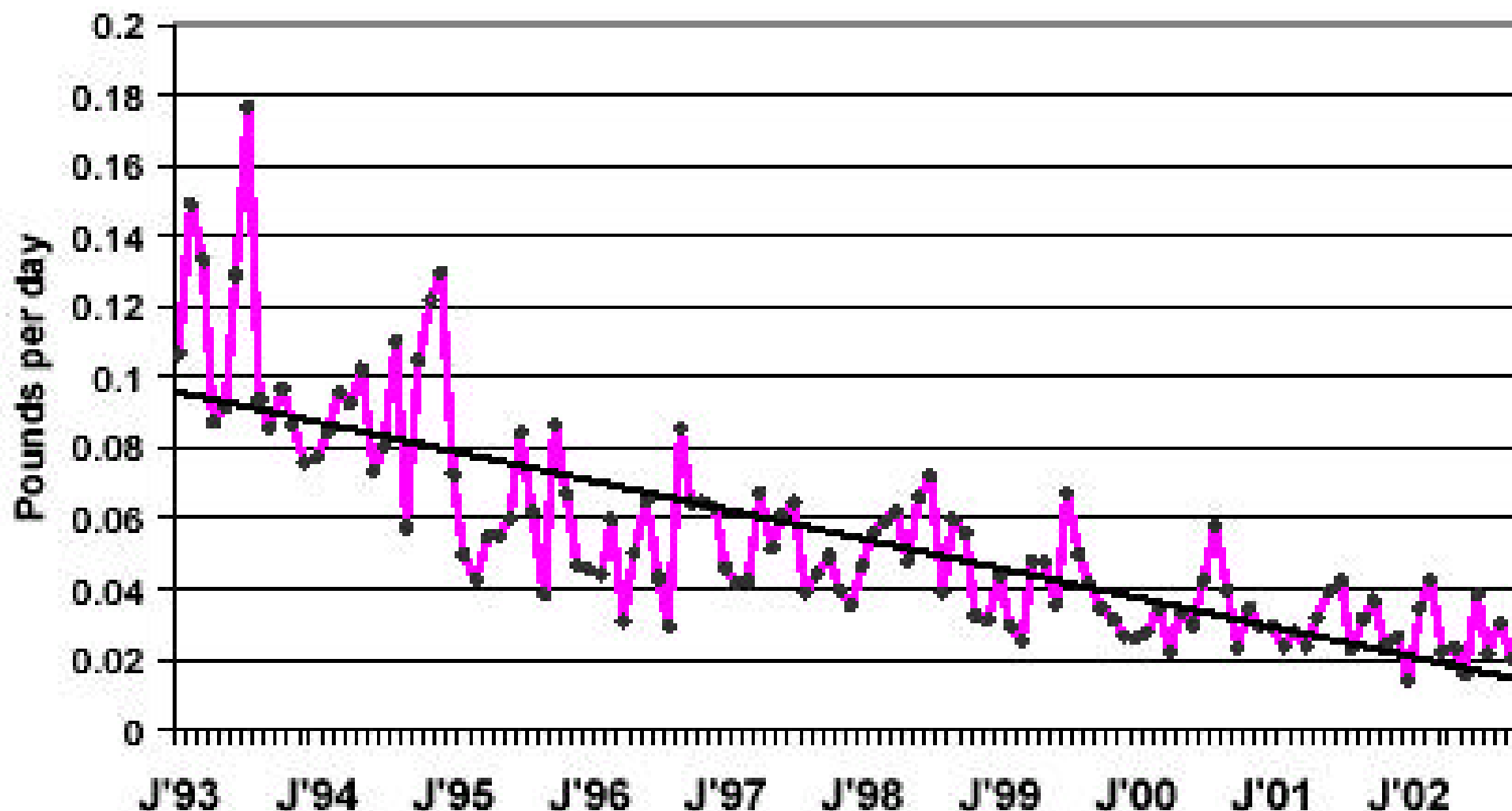
**If the 133,000 DDs clinics nationwide install  
amalgam separators? 22.1 tons annually will  
not end up in sludge**

**(ADA says only 6.5 tons discharged annually??)**

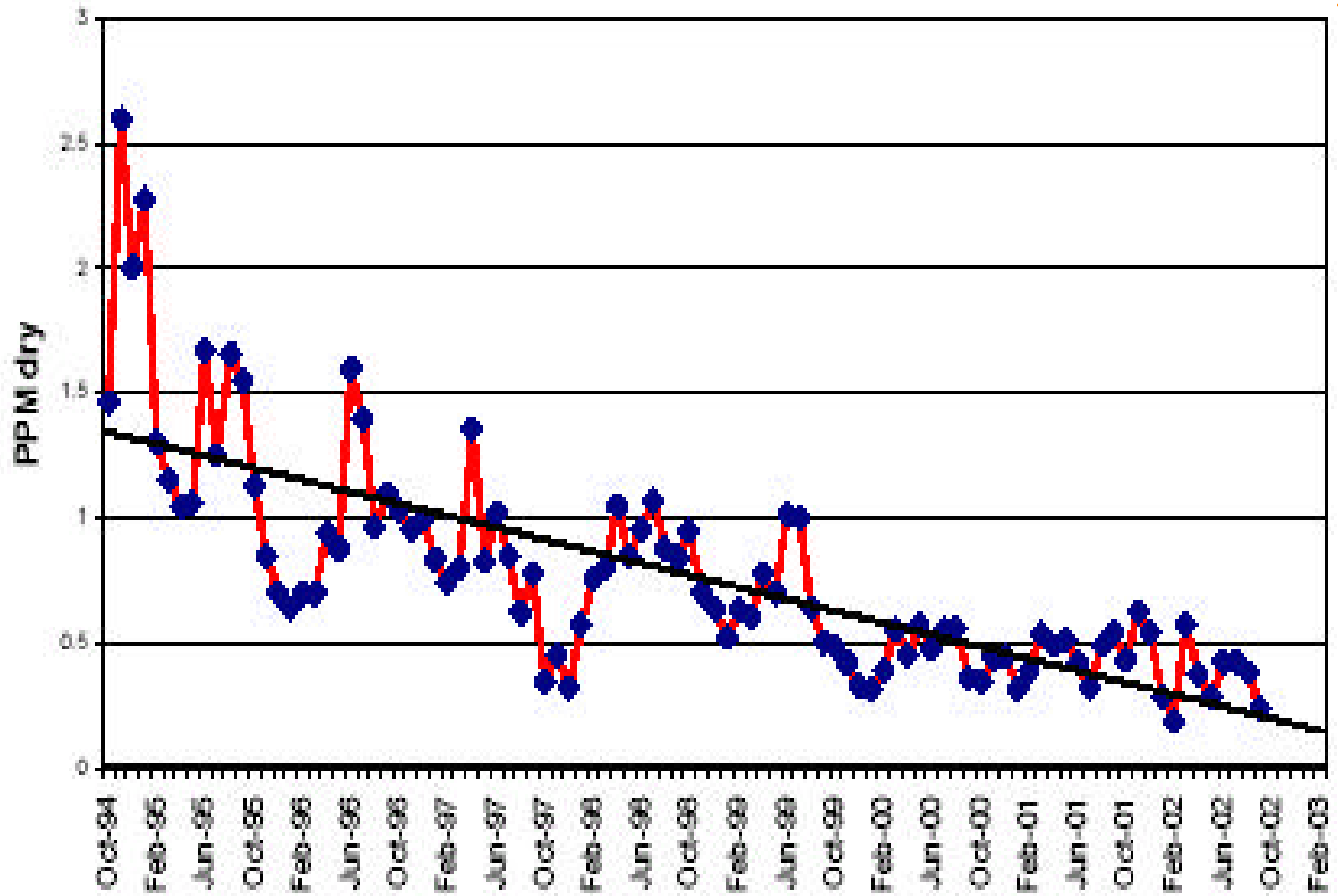


# Western Lake Superior Dental Waste Management Program

WLSSD Influent Hg



# MERCURY IN WLSSD SLUDGE

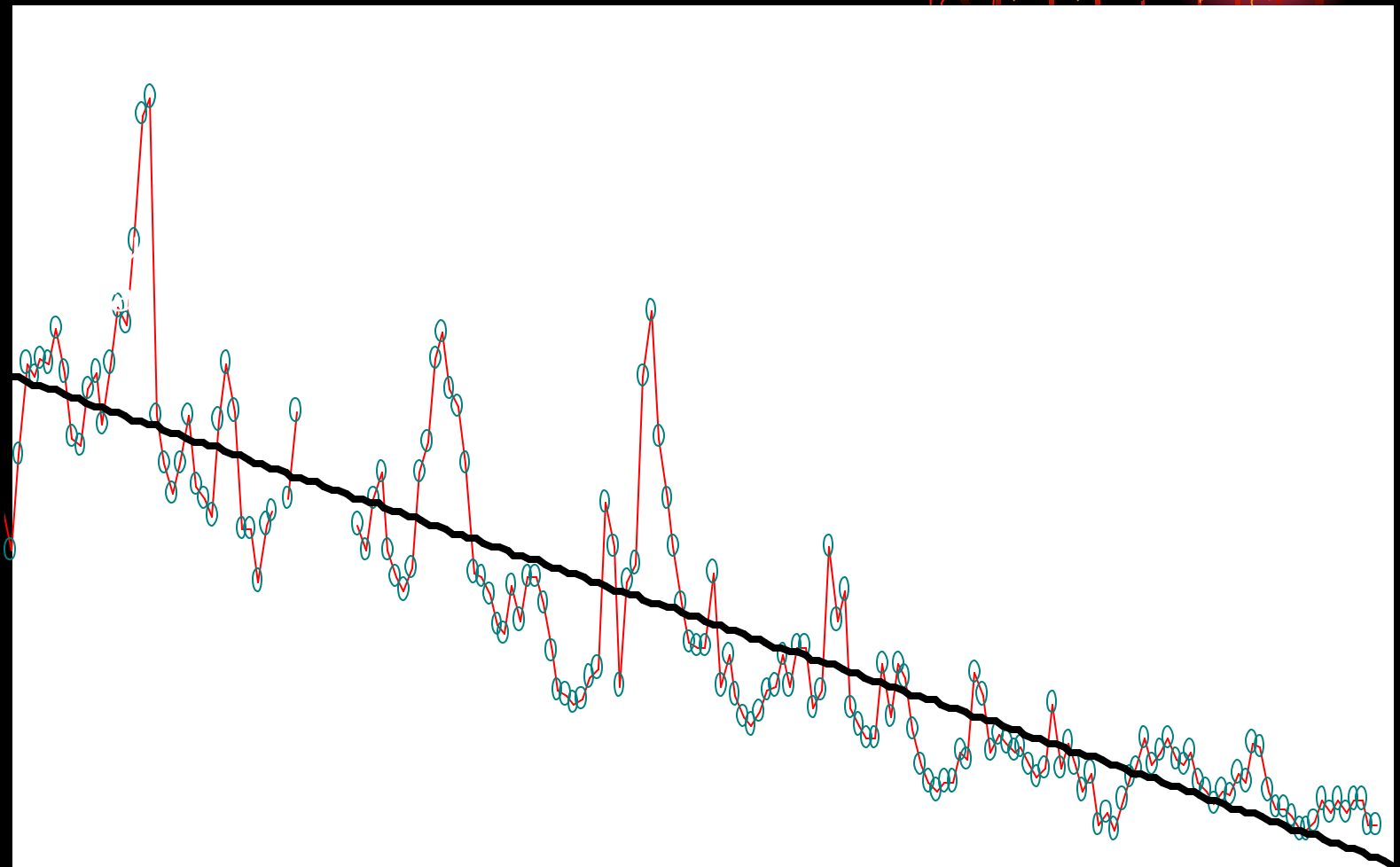


# Mercury In WW Sludge Great Lakes Dental Mercury Reduction Project (1/86 thru 1/01)

Dry wt. ppm

7

0



## Websites/Links

[mercury\\_policy@lyris.newmoa.org](mailto:mercury_policy@lyris.newmoa.org) ("THE" LISTSERVE)

<http://www.newmoa.org/Newmoa/htdocs/prevention/mercury/>

<http://www.dentalmercury.com/home.cfm>

<http://www.dentalmercury.com/publications.cfm>

<http://www.amsa-cleanwater.org/advocacy/mercgrant/>

<http://www.sbeap.org/ppi/industry/articles/articles.htm>

<http://www.mass.gov/dep/erp/dentists.htm>



<http://www.epa.gov/region5/air/mercury/dentaloptions2.pdf>

<http://www.h2e-online.org/tools/hg-recy.htm> (list of recyclers)

American Dental Association <http://www.ada.org>

American National Standards Institute <http://www.ansi.org> &  
<http://webstore.ansi.org/ansidocstore/find.asp?>

Canadian Council of Ministers of the  
Environment (Canada Wide Standard -amalgam)  
<http://www.ccme.ca/initiatives/standards.html>

Canadian Dental Association (MOU on dental amalgam)  
[http://www.cda-adc.ca/english/news\\_events/news\\_releases/  
2002/02\\_18/2002.asp](http://www.cda-adc.ca/english/news_events/news_releases/2002/02_18/2002.asp)

Kansas State University Dental Curriculum  
<http://www.sbeap.org>





**King County's voluntary dental program**

**<http://www.metrokc.gov/hazwaste/pubs/studies>**

**<http://www.mass.gov/dep/erp/dentists.htm>**

**King County's mandatory dental program**

**<http://dnr.metrokc.gov/wlr/indwaste/dentists.htm>**

**Minnesota Dental Association**

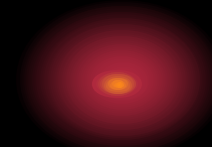
**[http://www.mndental.org/professionals/amalgam\\_recovery/](http://www.mndental.org/professionals/amalgam_recovery/)**

**Naval Dental Research Institute**

**<http://www.dentalmercury.com/home.html>**

**Royal College of Dental Surgeons of Ontario  
(Amalgam regulation and BMPs)**

**<http://www.rcdso.org>**



**Sustainable Hospitals Project**

**[http://www.sustainablehospitals.org/HTMLSrc/IP\\_Merc\\_BMP\\_DentalAmalgam.html](http://www.sustainablehospitals.org/HTMLSrc/IP_Merc_BMP_DentalAmalgam.html)**

**Toronto Sewer Use By-law**

**<http://www.city.toronto.on.ca/wes/techservices/involved/www/nbylaw/index.htm>**

**<http://dnr.wi.gov/org/water/wm/ww/mercury/mercury.htm>**

**[http://www.mndental.org/professionals/amalgam\\_recovery/](http://www.mndental.org/professionals/amalgam_recovery/)**

**<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2003/11/23/MERCURY.TMP>**

